Appendix C

Winter Fuels Explanatory Notes

Prices

The residential No. 2 heating oil and propane prices (excluding taxes) for a given State are based on the results of telephone surveys of a sample of marketers and refiners. Data are collected by State Energy Offices under the Energy Information Administration (EIA) State Heating Oil and Propane Program.

Sampling Methodology and Estimation Procedures

To estimate aggregate propane and No. 2 heating oil price data for a State, the sample weight and volume sales data were applied to the reported price, summed and divided by the sum of the weighted volume:

$$\sum_{j=1}^{s}\sum_{i=1}^{n_j} w_{ij} v_{ij} p_{ij} \; / \; \sum_{j=1}^{s}\sum_{i=1}^{n_j} w_{ij} v_{ij} .$$

where w = sample weight, v = volume, p = price, i = respondent, n_j = sample size of stratum j, and s = number of strata, to obtain a volume weighted price.

The volume used for No. 2 heating oil and propane is the company's residential sales volume as reported on the EIA-863 "Petroleum Product Sales Identification Survey."

These fixed volume weights indicate the relative importance of the individual companies according to the size of their sales. Therefore, changes in the average price across time reflect only the change in the price being offered by the company, and not changes in the amounts sold. Price indexes constructed using fixed volumes, such as these annual sales, are known as Laspeyres Indexes. The alternative method of weighting, current weights, would require each company to report the number of gallons sold at the reported price each pricing period. This method is more burdensome on the companies and reflects prices over a period of time as compared to a point in time. Therefore, the calculation of average prices tends to lag behind the reference period. Indexes constructed from current period weights are known as Paasche Indexes.

Both methods of weighting are correct; they do, however, vary when current weights are changing. It has been argued that during periods of change, the Laspeyres method has a tendency to overestimate price changes, while the Paasche method tends to underestimate price changes.

In this survey, it is expected that the relative change in volumes monthly is small. Residential sales are not bulk in nature and do not tend to reflect discounts on price for large volume purchases. Absolute changes in volume within a year's time would more likely reflect demand and be consistent across companies within a geographical area.

Residential No. 2 Heating Oil

The No.2 heating oil price data are reported by a statistical sample. The sample design used is similar to that used for the EIA Form EIA-782, "Resellers'/Retailers' Monthly Petroleum Product Sales Report." The sampling frame used was based on residential heating oil sales reported on the 1998 Form EIA-863, "Petroleum Product Sales Survey." Certainties were defined at the State level according to the market shares of sales in each State as reported in the frame survey. The remaining frame companies were stratified by their residential heating oil sales volumes in each State. Strata boundaries were determined using the Dalenius-Hodges procedure. The sample allocations used were designed to yield volume coefficients of variation of 15%. This target was projected to produce price coefficients of variation of one to two percent. The sample weights (w_{ij}) used in estimating average prices were calculated as N/n, the inverse of the probability of selection. Volume weights were assigned using the data reported in the frame survey.

Residential Propane

The propane price data are reported by a statistical sample. The sample design makes use of two strata, a certainty and a noncertainty stratum. Certainties were defined at the State level according to the market shares of sales in each State, as reported on the 1998 Form EIA-863, "Petroleum Product Sales Survey." Certainty outlets per company were identified using establishment lists developed using information obtained from the industry and state energy officials. Noncertainty allocations for each state were determined using one noncertainty stratum and calculating the number of companies necessary in that state to obtain a volume coefficient of variation 15%. This target was projected to produce a price coefficient of variation of one to two percent. The allocations were in terms of company-state units, but these translated to outlets for the selection of the sample, and State minimum and maximum sizes established. The noncertainty outlets from the establishment lists were ordered by State and zip code and using a random starting point, sampled systematically, that is, every kth outlet was selected, where k is the inverse of the sampling fraction in each State. Sampling weights (w_{ij}) for noncertainties were assigned by taking the inverse of the probability of selection for that State, where the probability of selection for each State equals the total number of outlets selected

for the State, divided by the total number of outlets in the State. Volumes for sampled outlets were calculated by dividing the total company volume in the frame survey by the number of outlets on the outlet list for each company.

Revision Error

Numbers may be revised in the publication based on data received late or receipt of revised data. Numbers are published as preliminary and final. The difference between preliminary and final data is called the revision error.

Response Rate

Response rates are generally 95 to 100 percent.

Note 3. Confidentiality of Information

Data on this form will be kept confidential and not disclosed to the public to the extent it satisfies the criteria for exemption under the Freedom of Information Act (FOIA), 5 U.S.C. section 552, and others regulations. It may be released to the Department of Justice or to any other Federal Agency for official use which may include enforcement of Federal Law. The information contained on this form may also be made available to any Committee of Congress, the General Accounting Office, or other Congressional agencies authorized by law to receive such information. A court of competent jurisdiction may obtain this information in response to an order.